SECURING A FUTURE FOR FISH AND WILDLIFE

A Conservation Legacy for Iowans

Executive Summary

Introduction

As a condition of receiving Federal funds through State Wildlife Grants, Congress mandated that state fish and wildlife agencies develop a *Comprehensive Wildlife Conservation Plan* by October 1, 2005. Each state's plan must address the needs of all wildlife, but focus primarily on species of greatest conservation need (SGCN) and their habitats.

The IDNR's Wildlife Bureau was given the responsibility for developing what is now called the *Iowa Wildlife Action Plan* (IWAP, or Plan). The bureau identified a 16-member Steering Committee with the expertise needed to complete the Plan. Thirteen Working Groups were created that involved 27 additional experts to assist with specific tasks assigned by the Steering Committee.

Early in the planning process the steering committee decided:

- The Plan would focus on wildlife (plants are discussed only in relation to habitats) and wildlife would include all birds, mammals, fish, mussels, amphibians, reptiles, land snails, dragonflies and damselflies found in Iowa.
- The Plan would have a 25-year focus to provide long term continuity but also results that could be appreciated by Plan supporters.
- The Plan would be strategic in nature. Operational would be crafted later to fit the unique missions and capabilities of conservation organizations interested in implementing the Plan.

Representatives of 93 conservation, recreation, education and agricultural support organizations served on a formal Advisory Group that developed a Plan vision and conservation actions for attaining that vision that are the basis for this Plan.

The Steering Committee and IDNR fisheries and wildlife biologists identified stresses affecting Iowa's wildlife and ranked terrestrial and aquatic stresses for each of the major taxonomic groups, habitats and landform regions included in the Plan

One of the key factors identified during the process of determining the SGCN was the lack of current, credible information on the distribution and abundance of many nongame species. A Working Group identified research and monitoring needs and proposed a model for statewide monitoring of wildlife. Other Working Groups identified site-specific locations where habitat strategies could most easily be implemented and identified recreation and education priorities.

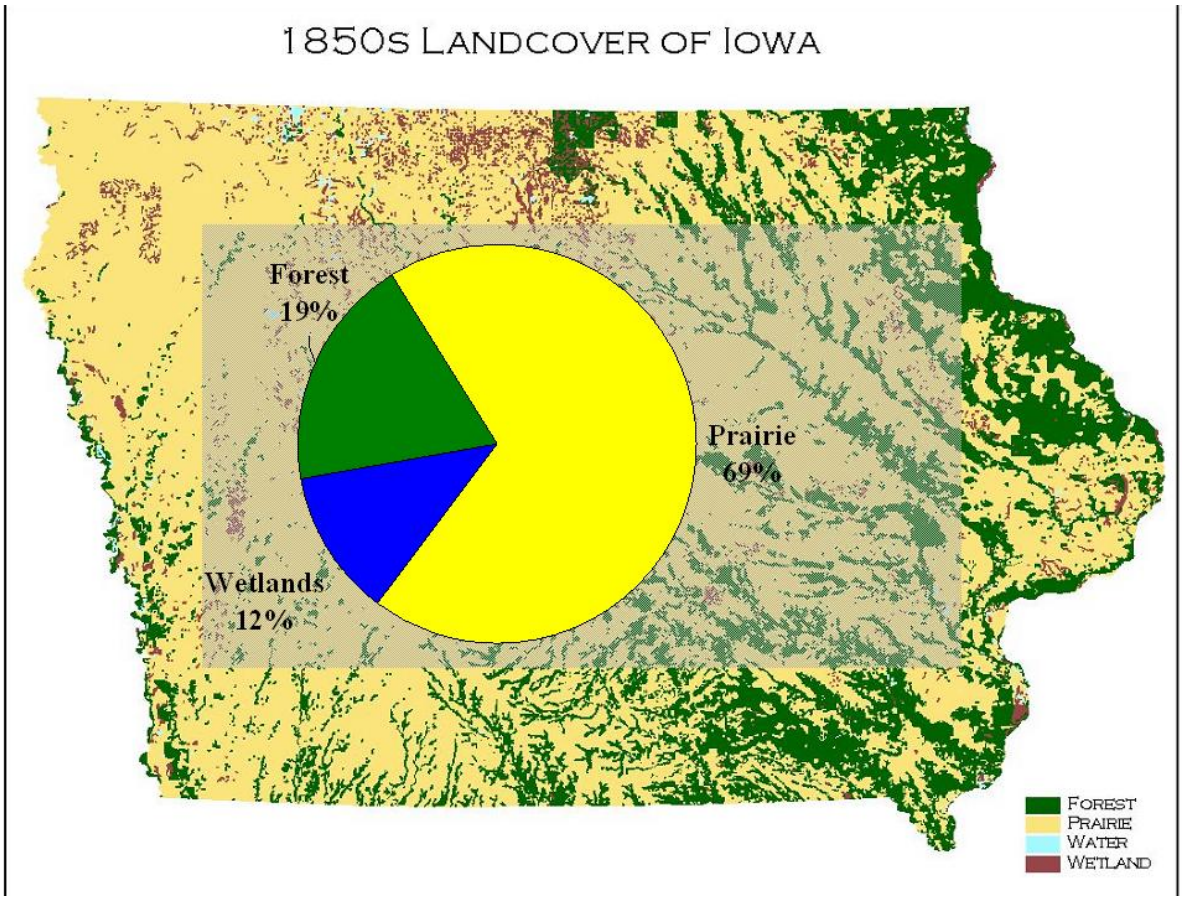
. A variety of efforts were made to ensure that information about the Plan received statewide distribution to the public as well.

While a large number of individuals contributed in some manner to the Plan, ultimate responsibility for its content lies with the Steering Committee and the Iowa Department of Natural Resources.

Iowa's Natural Plant and Animal Communities

Pre-settlement Iowa lay at a biological crossroads. Tallgrass prairies and hardwood forests dominated the cooler and more humid lands east of the Mississippi River. The warmer, drier shortgrass prairie and prairie potholes of the northern Great Plains lay to the west. To the north, great maple-basswood and pine forests covered the Great Lakes region. To the south, oak savannas gradually gave way to the vast oak-hickory forests of the Missouri Ozarks. These different ecological regions blended together in Iowa to produce a unique landscape of great biological diversity (Map 1).

Map 1. Landcover of Iowa in the 1850's



Source: Iowa DNR from Government Land Office original public land survey of Iowa.

Roughly 23 million of pre-settlement Iowa was tallgrass prairie. Nearly 7 million acres of forest or forest-prairie savanna covered much of the eastern third of the state and followed the river valleys into the prairies to the north and west. Around 4 million acres of prairie pothole marshes dotted recently glaciated and poorly drained northcentral and northwest Iowa. Another million acres of backwaters, sloughs and flooded oxbows were found in the floodplains of the Mississippi, Missouri and larger inland rivers. Drought, fire and grazing acted on these plant communities to create a great patchwork of habitats in both time and space. On some sites 250 species of plants could be found.

This great diversity of plant communities supported a diversity and abundance of wildlife that was foreign to settlers from the East. Prairie animals like bison, elk, pronghorn, prairie chickens and sharp-tailed grouse penetrated the tallgrass prairies from the West. White-tailed deer, wild turkeys, passenger pigeons, bobwhite quail and ruffed grouse followed the deciduous woodlands and river valleys into the prairie from the East. The prairie pothole and riverine wetlands provided excellent nesting habitat and attractive resting and feeding stops for millions of migrating ducks and geese and other waterbirds and shorebirds. Beaver, muskrat and river otters were associated entirely with marshes, streams and rivers. A variety of predators fed on this abundance of game animals - gray wolf, coyote red and gray fox, bobcat, mountain lion and black bear. All together 440 species of birds and mammals called Iowa home.

Impacts of Settlement

All this changed with the discovery that underneath Iowa's prairies lay the world's best farming soils. Settlement picked up after the Civil War with the advent of the railroad and new farming technology. By 1900 Iowa had 2 million citizens and the original prairie-wetland-forest mosaic had been converted into small farms of just 100 acres that covered the entire state. Just one-third of the forests, one-fourth of the wetlands and 10 percent of the prairie remained.

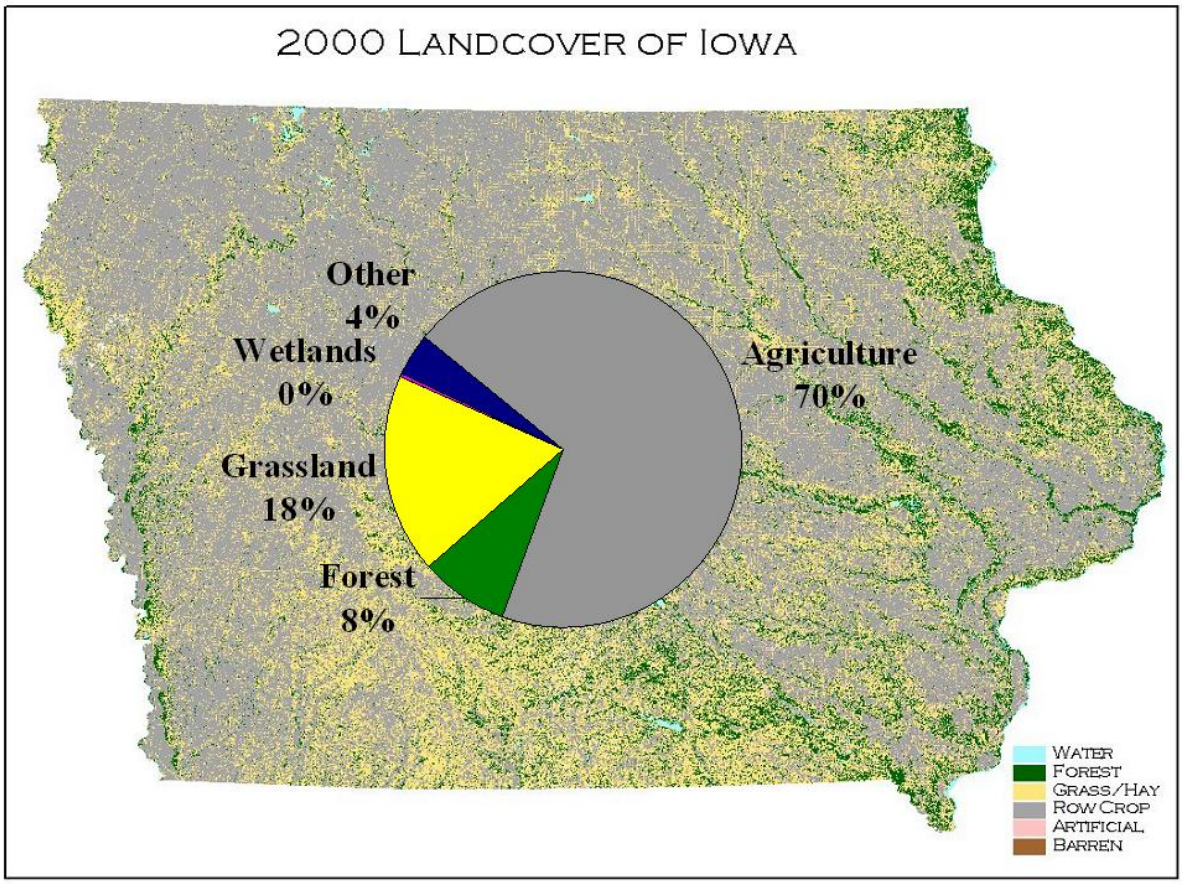
The original big game herds and the predators that fed them, the wild turkeys and most furbearers were gone, the passenger pigeon was extinct, and the flocks of migrating waterfowl were reduced to a shadow of their former numbers. Quail and prairie chickens benefited from the movement of crops into the prairies, but this was short lived. Only rabbits and squirrels were abundant enough to serve as game, and the native songbirds must have been greatly reduced also.

In the 20th century gasoline-powered equipment replaced horses. Hybrid seed corn was introduced to improve yields. Mechanical planters, harvesters (hay balers, corn pickers and grain combines) and grain handling equipment were reducing the need for hand labor. Herbicides and insecticides began taking over the need for repeated field cultivation for weed control.

By mid-century these labor saving devices permitted farmers to handle ever-larger farming operations. In the 1950's the average northern Iowa farm had grown to 250 acres, but was still a diverse operation of livestock, small grains, hay and corn. Foxtail-choked cornfields with plenty of waste grain were a pheasant hunter's delight and a source of food and cover for a variety of nongame wildlife.

The last half of the century intensified the pace of change. Improved technology and the flurry of often-conflicting farm legislation has led to a gradual and long-term decline in wildlife habitat on private agricultural lands. A shift from diversified agriculture to corn and soybean monocultures, larger farms and field sizes that have eliminated fence rows, windbreaks, waterways and other on-farm habitat; and the nearly exclusive use of farm chemicals for weed and insect control that have eliminated food and cover for songbirds and other wildlife. Conservation practices subsidized by various portions of recent farm legislation have helped slow this trend – WRP, EWP, FWP, WHIP and others – but the funding available to implement them has never equaled the amount subsidizing commodity crops that encourages their maximum production.

Map 2. Landcover of Iowa in 2000



The result of a century and a half of change on Iowa's landscape has been a huge shift in the composition of Iowa's plant communities and the wildlife that inhabits them. Ninety-four percent of Iowa was considered farmland by 1990. Seventy percent was in row crop, primarily corn and soybeans, with the remainder of the farmland in pasture and mowed fields. Row crop acreages have greatly increased since 1900, from 9.1 to 22.9 million acres today. Hay and small grain acreage decreased from 6.8 million acres to a current 1.9 million acres. Less than 0.1% of Iowa's native prairies (30,000 acres), 5% of its wetlands (422,000 acres), and 43% of its forests (2,900,000 acres) remain. Map 2 shows the land cover in Iowa in the year 2002. The majority of the state is covered with row crop, primarily corn and soybeans. Most of the remainder of the state is in grassland, often conservation reserve, road ditches or pasture, with lesser acreages of timber and other habitat types (Map 2).

Species of Greatest Conservation Need and Their Habitats

A variety of data resources were utilized by Working Groups as they selected the SGCN: Iowa Gap Analysis Project final report; published historic and scientific literature; unpublished reports, scientific surveys and databases maintained by the IDNR fisheries, wildlife and water quality bureaus; personal research and survey data supplied by wildlife ecologists at Iowa educational institutions; museum and personal specimen collections; state and regional databases maintained by other

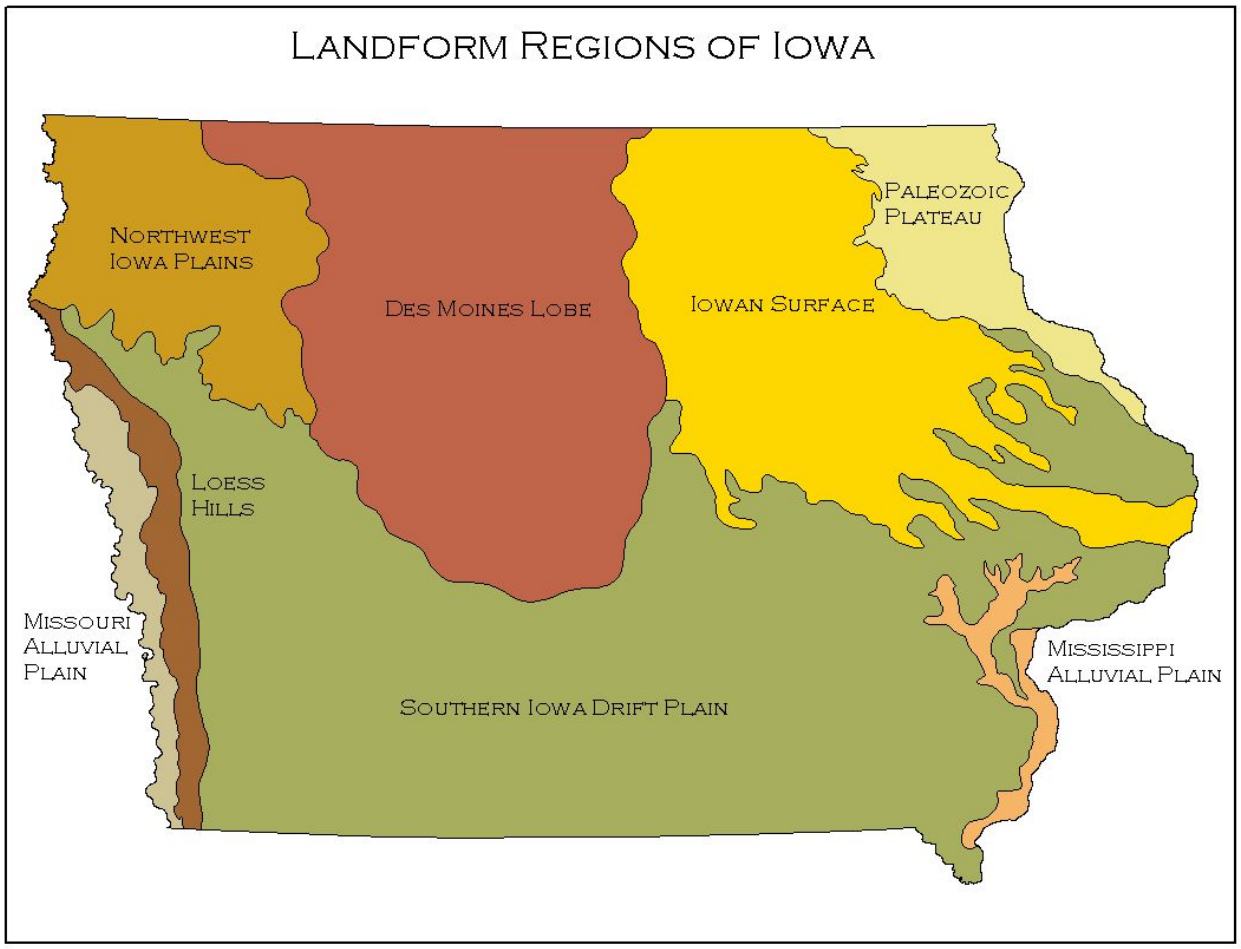
conservation organizations (e.g. NatureServe, PIF, PARC, TNC, USFWS, IOU, Audubon IBA, etc.); personal expertise of working group members and consultants.

A total of 999 species were considered by working groups. Birds and fish had the greatest number of SGCN, but each taxonomic group had some representatives. The groups with the highest percentage of species listed are those utilizing aquatic or semi-aquatic habitats – fish, mussels and dragonflies and damselflies. The status of most game animals is more secure, but ruffed grouse, woodcock and white-tailed jackrabbits were included on the list. *Nearly one third of all the species found in Iowa are considered to be in need of conservation to protect them from declining further into eventual Threatened or Endangered status*.

Iowa Landforms

Iowa has been divided into 8 separate landforms based on geological history, soils and dominant land use. (Map 3). These landforms have differences in wildlife habitats that exist today as well as the potential for restoring habitats that were cleared for agriculture.

Map 3. Iowa's Landform Regions



Terrestrial Habitats. The Steering Committee selected nine terrestrial vegetation classes as the basis for evaluating terrestrial wildlife habitats. A descriptive summary of the terrestrial habitat classes is listed in Table 1. Agriculture dominates all landforms, but the largest proportion of all wildlife habitats is found in

the Southern Iowa Drift Plain, the least in the NW Iowa Plain and in the Missouri and Mississippi Alluvial Plains. The Paleozoic Plateau has the greatest percentage of its landform in wooded habitats, the Loess Hills in grasslands.

In all landforms most habitat blocks are small and highly fragmented compared to Iowa's original landscape. This has implications for area-sensitive species that require large blocks of habitat to survive or reproduce successfully. It may also make it impossible for less mobile species to pioneer new habitats or to find a replacement home if their habitat is destroyed or altered unacceptably.

Table 1. Description of Terrestrial Habitat Classes Used in the IWAP.

HABITAT CATEGORY	DESCRIPTION
WOODED HABITATS	
Forest	>60% canopy of tree species with crowns interlocking
Wet - Forest/Woodland	Temporarily or seasonally flooded forest or woodland
Woodland	Open stands of tree species with 25-60% canopy cover
Shrubland	Shrubs >0.5 m tall forming >25% cover with <25% tree cover
WETLAND HABITATS	
Wet Shrubland	Temporarily, seasonally, and semi-permanently flooded wetlands or saturated deciduous shrubland
Herbaceous Wetlands	Temporarily, seasonally, semi-permanently, permanently flooded or saturated herbaceous wetlands
GRASSLAND HABITATS	
Warm Season Herbaceous Vegetation	<25% canopy cover made up of trees or shrub species. Herbs form at least 25% of canopy cover
Savanna	Temperate grassland with sparse coniferous or cold-deciduous tree layer
AGRICULTURAL LANDS	Lands normally worked to produce a crop or grazed by livestock
Cool Season Grassland	Cool season grassland (smooth brome, forage crops, and pasture)
Cropland	Worked land normally on an annual basis in corn, soybeans, sorghum, fallow fields or other crops.

Aquatic Habitats. Lakes, ponds, rivers, streams, creeks, impoundments and wetlands are the aquatic habitat classification used in the ICWCP (Table 2). Thirty-one major natural lakes with a combined surface area of almost 29,000 acres and 17 marsh-like shallow lakes with over 3,000 acres of combined surface area are still present in Iowa in spite of the extensive drainage of the past 150 years. Large oxbows are found along the Missouri and Mississippi Rivers and smaller, pond-like oxbows are found along many interior rivers and streams.

More than 200 man-made dams on rivers, streams and creeks impound from 15 acres to 19,000 acres. Four Corps of Engineers flood control reservoirs on the Des Moines river (Saylorville and Red Rock reservoirs), the Iowa river (Coralville Reservoir) and the Chariton river (Rathbun Reservoir) are the largest.

There are more than 87,000 ponds statewide. Most are in the Southern Iowa Drift Plain south of Iowa Highway 92. Ponds are generally less than 10 acres. Iowa has over 19,000 miles of interior rivers and streams. There are 87 cold water streams located in northeast Iowa with a combined length of 266 miles. The 25

Table 2. Aquatic habitat classes in the IWAP

Aquatic Habitat	Description
River	Large flowing bodies of water, normally with permanent flow and draining over 100 square miles.
Stream	Smaller flowing bodies of water, normally permanent, that serve as tributaries to rivers and drain less than 100 square miles.
Creek	Even smaller flowing stretches, often intermittent and ephemeral, that flow into streams
On-stream Impoundment	Slowly flowing bodies of water formed from artificial damming of a river, creek or stream, generally less than 500 acres in size and having a watershed to lake ratio >200:1.
Backwater	Slow flowing bodies of water associated with larger river systems. Back-channel low-lying areas filled with water during high flow events but may be completely isolated from the river during low flow and may exhibit no flow during these periods. They are especially prevalent on the Mississippi River.
Oxbow	A sub-class of backwaters, they are water bodies formed in old river channels that are now cut off from the main channel and flow of a river
Lake	Large bodies of water exhibiting little or no flow with emergent vegetation over less than 25% of the surface area. They may be either natural or constructed.
Shallow lake	Open freshwater systems where maximum depth is less than 10 feet. Normally in a permanent open water state due to the altered hydrology of watersheds and unmanaged outlet structures that maintain artificially high water levels. May be fringed by a border of emergent vegetation in water depths less than 6 feet. When clear, they are dominated by emergent and submergent vegetation.
Pond	Smaller standing bodies of water, often exhibiting large swings in dissolved oxygen and water temperatures and generally less than 10 acres in size

largest interior rivers extend over 3,500 miles and numerous smaller creeks and streams feed each other.

Habitat Preferences of SGCN

SGCN were assigned to a habitat class or classes that were considered to be the most critical or limiting to the species distribution and abundance in Iowa. SGCN with common habitat preferences were then grouped into the 9 terrestrial and 8 aquatic habitat classes (Table 3). These groupings should be looked at as a very general overview useful only for identifying habitat protection or restoration priorities at the landscape level. Detailed habitat management plans for SGCN must consider their entire individual habitat needs.

SGCN were found in all of the terrestrial and aquatic habitats in Iowa (Table 4). Flowing water aquatic habitats had the greatest number of SGCN of any habitat class, followed by herbaceous wetlands. The number of aquatic SGCN nearly equals the number of terrestrial species, yet surface water covers just 1% of Iowa. If wetlands are included with aquatic habitats instead of terrestrial, their positions

Table 4. Summary of habitat preferences of SGCN by habitat class.

	Taxonomic Class								
Habitat Class	**Birds**	**Mammals**	**Reptiles & Amphibians**	**Butterflies**	**Land Snails**	**Dragonflies & Damselflies**	**Fish**	**Mussels**	**Total**
Terrestrial Habitat Classes	**169**	**34**	**63**	**42**	**8**	**7**	**0**	**0**	**298**
Wooded	**74**	**19**	**19**	**12**	**8**	**0**	**0**	**0**	**132**
Forests	24	10	2	3	8	0	0	0	47
Wet Forests/Woodlands	18	3	7	0	0	0	0	0	28
Woodlands	18	4	10	9	0	0	0	0	41
Shrubland	14	2	0	0	0		0	0	16
Wetlands	**39**	**2**	**14**	**7**	**0**	**7**	**0**	**0**	**69**
Wet Shrubland	4	0	3	0	0	0	0	0	7
Herbaceous Wetlands	35	2	11	7	0	7	0	0	62
Grasslands	**32**	**10**	**23**	**12**	**0**	**0**	**0**	**0**	**77**
Warm Season Herbaceous	23	8	16	10	0	0	0	0	57
Savanna	9	2	7	2	0	0	0	0	20
Agricultural Lands	**24**	**3**	**7**	**11**	**0**	**0**	**0**	**0**	**45**
Aquatic Habitat Classes	**0**	**1**	**22**	**0**	**0**	**36**	**131**	**41**	**231**
River	0	1	4	0	0	3	46	19	73
Stream	0	0	3	0	0	5	15	7	30
Creek	0	0	1	0	0	3	22	5	31
Impoundment	0	0	1	0	0	0	9	1	11
Backwater	0	0	7	0	0	3	17	1	28
Lake	0	0	2	0	0	8	17	4	31
Pond	0	0	4	0	0	14	5	4	27
Total	**169**	**35**	**85**	**42**	**8**	**43**	**131**	**41**	**529**

are reversed. Aquatic and semi-aquatic species also had the highest percentage of their species listed as SGCN.

Setting priorities for conserving wildlife habitats is affected by:

- The general lack of all wildlife habitat in Iowa;
- The lack of specific knowledge on the distribution and abundance of most SGCN;
- The presence of SGCN in all terrestrial and aquatic habitats;
- The difficulties in identifying the habitat quality.

Given these conditions, the best approach may be to accept that all wildlife habitats in Iowa are imperiled to some extent and that efforts to preserve SGCN should address all species in all habitats.

STRESSES ON IOWA'S WILDLIFE AND ITS HABITATS

Stresses were ranked as Low. Moderate or High based on the following definitions: **Low**	If no action is taken, these stresses may degrade certain populations or habitats but at a level that will still permit sustainability of current populations or habitats.
Moderate	If no action is taken, these stresses will continue to degrade populations or habitats until a future time when populations or habitats are no longer sustainable. Corrective actions need to be studied and implemented in the near future.
High	If no action is taken, these stresses will cause a widespread degradation of populations and habitats resulting in an increased risk of statewide extirpation of species and loss of sustainable habitats. Corrective actions should be immediate and widespread, wherever the species or habitats occur.

The greatest stresses impacting Iowa's wildlife today all stem from human decisions about land use. The removal of most permanent vegetation from the landscape and the degradation of remaining habitats through improper or excessive use have had numerous inter-related consequences:

- A lack of adequate habitat for terrestrial wildlife;
- Reduced habitat quality that limits their use by SGCN;
- Isolation of populations of less-mobile species;
- Altered hydrology that removes water from the land too quickly;

- Streambed degradation;
- Stream and shoreline alteration;
- Accelerated erosion of unprotected soils;
- Excessive siltation of flowing and impounded waters;
- Excessive nutrient input leading to accelerated eutrophication;
- Loss of submergent and emergent vegetation;
- Reduced habitat quality and quantity for aquatic and semi-aquatic organisms and for human use as well;
- Degraded ecosystems are being invaded by aggressive exotic species that are displacing native wildlife

THE IOWA WILDLIFE ACTION PLAN

A Vision for the Future

Barring an environmental or economic collapse of global proportions, Iowa will remain one of the world's great agricultural regions. The highest and best use of most of its landscape is in agricultural production. Nothing in this Plan suggests returning Iowa to its pre-settlement state on any but a small part of the land. The challenge for Iowans is to find a way to protect our remaining wildlife heritage and preserve a legacy for our heirs by creating viable and socially acceptable wildlife environments within a landscape dominated by agriculture.

To establish a focus for future wildlife conservation activities, the Advisory Group developed a vision for the next 25 years that contains 6 elements. These elements include benefits to fish and wildlife, the citizens who enjoy and support them and the private landowners who must embrace them if the vision is to be realized. With each vision element the Advisory Committee developed specific conservation actions that need to be implemented to reach the Plan's goals in a 25-year framework.

These *vision elements* and *conservation actions* are not specifically designed to be implemented by IDNR. They are designed to provide a broad framework of actions that can be undertaken by conservationists at all levels of government, by private conservation organizations and by private citizens. Extensive coordination will be necessary between these stakeholders to make the vision a reality.

1) A Vision for Iowa's Wildlife: ***By 2030 Iowa will have viable wildlife populations that are compatible with modern landscapes and human social tolerance.***

Goals:

- Common species will continue to be common.
- Populations of SGCN will increase to viable (self-sustaining) levels.
- The abundance and distribution of wildlife will be balanced with its impact on the economic livelihood and social tolerance of Iowans.

Conservation Actions:

- Develop a balanced program of wildlife conservation by increasing the emphasis on species of greatest conservation need.
- Develop scientifically reliable knowledge on the distribution, abundance and ecological needs of all wildlife species.
- Focus on protection, restoration, reconstruction and enhancement of native plant communities and wildlife habitats.
- Restore viable wildlife populations to suitable habitats through informed relocation and reintroduction programs.
- Protect ecosystem stability by developing invasive species management plans that provide early detection strategies to control exotic invasive species.
- Develop methods to identify and reduce economic and social conflicts between wildlife and citizens.

2) A Vision for Wildlife Habitats: *By 2030 Iowa will have healthy ecosystems that incorporate diverse, native habitats capable of sustaining viable wildlife populations.*

Goals:

- The amount of permanently protected wildlife habitat in Iowa will be doubled to 4% of the state's land area.
- Protected habitats will be diverse, representative, native plant communities in large and small blocks on public and privately owned land and waters.

Conservation Actions:

- Identify habitats, landscapes and travel corridors important to species of greatest conservation need in all regions of the state.
- Permanently protect, restore, reconstruct and enhance large areas of wildlife habitat - systems that include large core tracts, watershed and greenbelt corridors, and other associated travel corridors - that can be managed for biodiversity.
- Ensure that long-term Federal land conservation programs meet the needs of landowners and wildlife on privately owned lands and waters.
- Provide technical guidance and supplemental cost share programs to private landowners to maximize the benefits to wildlife from Federal land conservation programs.
- Coordinate public land acquisition and private land habitat programs to provide habitat on a landscape scale.

3) A Vision for Wildlife Management: *Diverse wildlife communities will be developed on public and private lands and waters through the use of adaptive ecological management principles.*

Goal: Wildlife and fisheries management will be based on science.

Conservation Actions:

- Establish wildlife population and habitat management goals for public and private lands and evaluate their effectiveness.
- Develop and implement management plans on public and privately owned lands and waters that promote biodiversity and improve the status of species of greatest conservation need.
- Coordinate habitat management policies and messages among all layers of government to promote goals of the Plan.
- Work with legislators to address liability issues related to landowners' usage of outside contractors to implement management practices on their land.
- Educate other government land management and protection agencies on the Plan so it may be used in conjunction with their work activities (ex. DOT, IACCB, USFWS).
- Provide adequate funding for the land management staffs of natural resource agencies and organizations to carry out the visions of the Plan.
- Provide funding and staff positions to carry out the actions of the Plan.

4) A Vision for Wildlife-Associated Recreation: *More Iowans will participate in wildlife-associated recreation, and all Iowans will have access to publicly owned recreation areas to enjoy wildlife in its many forms.*

Goal:

- The number of Iowans participating in wildlife-associated recreation (wildlife viewing, photography, hiking, outdoor classrooms, hunting, fishing etc.) will increase 50 percent by 2030;
- Wildlife-associated recreation will be available to all Iowans on public lands near their home;
- Increasing wildlife-associated recreation will improve public health.

Conservation Actions:

- Develop market-based research to determine the wildlife-associated recreational interests of all Iowans, especially non-traditional users like minority and ethnic groups and citizens with disabilities.
- Coordinate wildlife population, habitat and management goals for public lands with potential recreational uses to assure that all recreation is

compatible with sound wildlife management and to minimize conflicts between users.

5) A Vision for Wildlife Education: *Iowans will respect wildlife for its many values and they will advocate effectively for conservation of wildlife and wildlife habitats.*

Goal: Iowans will understand the relationships between land use, wildlife diversity and abundance, the quality of life for all citizens, and the positive effects wildlife has on Iowa's economy.

Conservation Actions:

- Work with stakeholders to develop consistent messages about the value of wildlife and their associated habitats that convey health, wellness, economic, and other *quality of life* benefits. (Tourism and economic development, Department of health, physicians, wellness coordinators, bank place market tours).
- Refine and expand current wildlife education efforts targeted to formal and non-formal education venues. Focus on:
- Determine appropriate target audiences based on the overarching goals of this Plan.
- Secure additional staff to coordinate educational efforts across the state
- Develop training programs for professionals in fields that affect land use (agriculture, engineering, community planning, developers, etc.) and community leaders to inform them of the impacts of development on wildlife habitats and the quality of life for citizens on a local level.

6) A Vision to Fund Wildlife Conservation: *Stable, permanent funding will be dedicated to the management of wildlife at a level adequate to achieve the visions of this plan.*

Goal: Government (Federal, state, and county) and private conservation spending will be increased so that the goals of this Plan are reached by 2030.

- Funding will be dependable, secure, and appreciated as a powerful economic and social investment.

Conservation Actions:

- Develop a marketing campaign that will convince citizens, conservation professionals, and activists in private conservation groups, community leaders and politicians that funding this Plan will be an important step in helping to solve a myriad of social and economic problems in Iowa.

- Expand membership in the coalition of traditional wildlife and agricultural groups that is lobbying Congress for Federal farm conservation programs on private land to include nongame and recreational interests.

- Develop a broad-based coalition of conservation leaders, educators, politicians and local economic interests to identify and secure passage of a permanent funding mechanism that will provide sufficient funding to meet Plan goals in 25 years.

Monitoring and Research

Tracking accomplishments of the IWAP so that political and financial support can be maintained over the 25-year implementation period is a first-order priority of the Plan. Discrete accomplishments like funding attained, education programs initiated and presented, site-specific recreational opportunities developed, citizen participation, habitats protected, information learned from survey and research studies, etc. must be tracked and made constantly available for scrutiny by all stakeholders.

The lack of long term monitoring programs to document the abundance and distribution of SGCN was one of the greatest challenges faced in developing this Plan. Virtually all monitoring programs have focused on game species, T & E species, common bird surveys (e.g., Breeding Bird Survey), and evaluations of wildlife restorations. Little information is available on the distribution and status of amphibians, small and meso-mammals, snails, butterflies, odonates, freshwater mussels, reptiles, non-game fish and many nongame birds. The Steering Committee and Working Groups identified $8 million of short term research and survey projects that are badly needed and a long term monitoring program that would provide the first-ever statewide inventory of all wildlife that would cost $10 million over the 5-year life of the project.

The State of Iowa is in need of surveys and monitoring programs that focus on the biodiversity of the state.

PRIORITIES FOR CONSERVATION ACTIONS

The Steering Committee believes a blend of three approaches will be necessary to accomplish all the goals of the IWAP:

- Protect and enhance existing habitats that benefit SGCN. Areas with the greatest existing species diversity should be targeted, land acquired or permanent conservation easements developed, and the appropriate management plans implemented. But SGCN are declining with the amount of existing habitat available today. Enhancing these habitats may slow the decline in local populations, but in our view will not by itself reverse statewide or regional declines.
- Develop new habitats for SGCN in areas where these habitats do not exist, emphasizing the development of 3,000 acre - 5,000-acre blocks with travel corridors between them.
- Improving the status of aquatic SGCN will require a more broadly applied conservation effort. Vegetative cover must be returned to more of the landscape to hold soil in place.

The plight of all SGCN in Iowa is caused by the loss of vegetation from the landscape that once provided wildlife habitat and kept excessive soil and associated products out of the waters. Protecting existing habitats is a good strategy to prevent further losses, but it alone will not return SGCN to their former range or raise populations to a viable level. Habitats for SGCN need to be restored in socially acceptable places. Widespread conservation practices will be needed to address water quality issues and are best approached on a watershed basis.

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Plan Implementation

No single entity – government conservation agency, private conservation organization or research institution – can implement all conservation actions in this Plan even if full funding is achieved. To access all the energy, expertise and enthusiasm that will be needed an *IWAP Implementation Team* should be formed with representatives from all stakeholder organizations. Identifying an Implementation Team chairperson, solicitation of team members and coordination of its activities should be vested in IDNR as the statutory agency responsible for managing the state's wildlife resources. Team members should represent state, Federal, county and local government wildlife and land management agencies and conservation organizations (see Interagency Cooperation below). Team members should have sufficient authority to speak for their agency or organization and be able to commit resources to carry out agreed-upon actions.

The mission of the Implementation Team should be to identify common interests, solidify working agreements, and focus members on conservation actions that meet the goals of the IWAP in the most financially efficient and timely manner possible. The Implementation Team's responsibilities should include:

- Identify permanent or short term Working Teams to implement the vision elements and conservation actions outlined in this Plan;
- Develop general assignments for Working Teams, reporting procedures and schedules;
- Review recommendations and priorities established by Working Teams for conservation actions and funding;
- Coordinate activities of the Implementation Team members to accomplish agreed-upon conservation actions;
- Review progress toward IWAP visions, goals, and actions; identify barriers to progress and seek solutions that cross agency and organization lines. The Implementation Team may initially have to meet regularly; but after the desired level of cooperation and action is reached it should meet at least annually to review progress and solve problems that may arise.

IWAP Review

If the general outline of activities proposed in this Plan is followed, review of the IWAP will occur as follows:

- Achievements will be compiled and make available to the public as individual projects are completed ;
- Work Teams will review operational activities on a continual and ongoing basis;
- The Implementation Team will review activities at least annually;
- Review of the long-term wildlife monitoring project will occur at least after 5 years when the initial inventory is complete.
- The Steering Committee recommends that a formal review of the entire IWAP should take place after no more than 10 years or oftener if desired by the Implementation Team.

The Cost of Sustaining Iowa's Biodiversity

The costs of reaching the goals outlined in this Plan exceed the historic levels of conservation funding in Iowa. Hunters and anglers have funded most wildlife conservation. National and state trends indicate that the number of participants in hunting and fishing is declining. Approximately 45% fewer Iowans buy hunting licenses today than a generation ago. To reach the goals established in this Plan a broader spectrum of Iowans must share in the funding burden.

The annual cost to double the amount of permanently protected wildlife habitat by 2030 is estimated to be $48 million. Currently $29.6 million is available from a combination of hunter-angler licenses and excise taxes, Federal wildlife appropriations, Federal water quality appropriations, Federal farm programs, and NGO and CCB activities *if these funds were all dedicated to permanently protecting wildlife habitat*. This amount also assumes that Congress will fund SWG programs at the level anticipated by CARA and that state matching funds will be made available. That would leave a shortfall of $18.4 million a year to be raised from other sources.

Additional costs to implement the Plan include expanded research and monitoring, greater public lands management costs and greater assistance to private landowners. Combining the habitat protection and habitat management, survey and science costs brings the total funding needed to approximately $40 million additional annually. For purposes of reference only, the revenues raised from adding a 1/8% sales tax is $44 million. Many other funding options are available.